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FALLS OF THE NIAGARA.

BY F. W. P GREENWOOD.

The voice of the Lord is upon the waters; the voice of the glorious God; the Lord thundereth over the great waters.
PSALM XXIX. 3. *Old Translation.*

THERE is a power and beauty, I may say a divinity, in rushing waters, felt by all who acknowledge any sympathy with nature. The mountain stream, leaping from rock to rock, and winding, foaming and glancing through its devious and stony channels, arrests the eye of the most careless or business-bound traveller; sings to the heart and haunts the memory of the man of taste and imagination, and holds, as by some undefinable spell, the affections of those who inhabit its borders. A waterfall, of even a few feet in height, will enliven the dullest scenery, and lend a charm to the loveliest; while a high and headlong cataract has always been ranked among the sublimest objects to be found in the compass of the globe.

It is no matter of surprise, therefore, that lovers of nature perform journeys of homage to that sovereign of cataracts, that monarch of all pouring floods, the Falls of Niagara. It is no matter of surprise, that, although situated in what might have been called, a few years ago, but cannot be now, the wilds of North America, five hundred miles from the Atlantic coast, travellers from all civilized parts of the world have encountered all the difficulties and fatigues of the path, to behold this prince of waterfalls amidst its ancient solitudes, and that, more recently, the broad highways to its dominions have been thronged. By universal consent it has long ago

been proclaimed one of the wonders of the world. It is alone in its kind. Though a waterfall, it is not to be compared with other waterfalls. In its majesty, its supremacy, and its influence on the soul of man, its brotherhood is with the living ocean and the eternal hills.

I am humbly conscious that no words of mine can give an adequate description, or convey a satisfactory idea, of Niagara Falls. But having just returned from a visit to them,* with the impression which they made upon my mind fresh and deep, I may hope to impart at least a faint image of that impression to the minds of those who have not seen them, and re-touch, perhaps, some fading traces in the minds of those who have. And if I can call the attention of any to this glorious object as a work of God, and an echo of the voice of God; if by any thing which I may fitly say of it, I can quicken the devotion of one breast, I shall feel that I have fulfilled a sacred duty, and that I have not unworthily expressed my sense of obligation for having been permitted to behold it myself.

I will not begin my description with the cataract itself, but take you back to the great lake from which the Niagara flows, so that you may go down its banks as I did, and approach the magnificent scene with a knowledge regularly and accumulatively gained of its principal accessaries. For the river and the lake, nay, the whole superb chain of rivers and lakes, should be taken into view, when we would conceive as we ought of the Falls of Niagara.

As we approach the town of Buffalo, which is situated near the eastern extremity of Lake Erie, that wide spread sheet of water opens to the sight. If the traveller has never seen the ocean, he may here imagine that he sees it. If he has, he will say that it is a sea view which here lies before him. As he looks to the west, the horizon only bounds the liquid expanse; and it is not till he descends to the shore, and marks the peculiar, quiet and exact level of the even and sleeping lake, that he will find any thing to remind him that he is not on the coast of the salt and swelling sea. Four miles north from Buffalo we come to the vilage of Black Rock;† and it is here that the boundaries of the lake contract, and its waters begin to pour themselves out through the sluceway

*The visit was made with some friends, in July, 1831.

†According to Mr. Featherstonhaugh, editor of the Monthly American Journal of Geology and Natural Science, the 'seams and patches of dark-colored chert contained in the beds of carboniferous limestone,' have furnished its name to this vilage.

of the Niagara river. The river is at this place about a quarter of a mile broad; and, as I gazed on its dark and deep and hurrying stream, I felt a sensation of interest stealing over me, similar to that which I have experienced in reading of the preparations of men for some momentous expedition. Opposite Black Rock, on the Canada side, is the village of Waterloo, to which we were ferried over, and from which we commenced our ride down the river, which runs north into Lake Ontario. There is also a road on the American side, from Buffalo to the Falls, a distance, either way, of about fifteen miles.

From Waterloo we pass on by a level road, immediately on the western bank of Niagara, and observe that the river continually becomes wider, till at length it divides into two streams which sweep round an island several miles in length. They then unite again, forming one stream as before, only that it is increased in breadth and swiftness. And now the interest thickens, and begins to grow intense. Hitherto we had been travelling on the side of a large river, it is true, but one not much distinguished otherwise, either by its motion, its shape, or the beauty of its borders. We are obliged to call on ourselves to consider where we are, and whither we are going; for Niagara itself seems unconscious of the grand associations with which it is freighted. It moves as if unmindful, or as not caring to put the traveller in mind, that its waters have come down through the whole length of Erie from the far away Huron, Michigan, Superior; that they are just about to rush over the wondrous precipice below, and then are to hasten forward into another majestic lake, and from it are to pass through the portals of a thousand islands, and the alternate rapids and lakes of a noble and romantic river, washing the feet of cities,* and so to flow on into the all-receiving sea. We are obliged to remember this, I say; for the unpretending waters, though pressing forward continually and intently, have thus far told us nothing, themselves, of their long pilgrimage behind, or the yet more eventful journey before them. But here, as they are meeting round Grand Island, they break their silence and speak, and the whole scene becomes full of spirit and meaning. Here, about three miles from the Falls, you see the white crested rapids tossing in the distance before you. Here, even in the most unfavorable state of the weather, you hear the voice of the cataract, pervading the air with its low, monotonous, continuous roar. And here you see a column of mist rising up,

* Montreal and Quebec are both on the St. Lawrence.

like a smoke in distantly burning woods, and designating the sublime scene over which it is immediately hanging. I know not that I was afterwards more strongly affected, even by the Falls themselves, than I was by the sight of this ever changing and yet never absent guide, this cloudy pillar, this floating, evanescent, and yet eternal testimony, which pointed out to me the exact spot which had been for so many years as a shrine to thousands, which I had heard of and read of so long, and which I had myself so often visited, though not in person, yet with my reverential wishes, with my mind, and with my heart. Childhood came back to me, with its indistinct, but highly wrought and passionate images; maps were unrolled; books were opened; paintings were spread; measurements were recalled; all the efforts which the art of man had made, all the tributes which his spirit had offered, at the call of the great cataract; all these associations, with other dream-like thoughts of the wilderness, the lake, and the stream, rose up unbidden and with power within me, as I steadfastly regarded that significant, far off mist, and knew that I, too, was soon to stand on the consecrated spot, and see, and feel.

A mile or two is soon passed, and now we turn a little from the road to the right, in order to have a near view of the rapids. These occupy the whole breadth of the river, from shore to shore, and extend half a mile back from the Falls, and are formed by the rush of the entire body of waters down a rough bed, the descent of which in the course of this half mile is fifty feet. Here all is tumult and impetuous haste. The view is something like that of the sea in a violent gale. Thousands of waves dash eagerly forward, and indicate the interruptions which they meet with from the hidden rocks, by ridges and streaks of foam. Terminating this angry picture, you distinguish the crescent rim of the British Fall, over which the torrent pours and disappears. The wilderness and the solitude of the scene are strikingly impressive. Nothing that lives is to be seen in its whole extent. Nothing that values its life, ever dares venture it there. The waters refuse the burden of man, and of man's works. Of this they give fair and audible warning, of which all take heed. They have one engrossing object before them, and they go to its accomplishment alone.

Returning to the road, we ride the last half mile, ascending gradually, till we come to the public house.* A footpath through the garden at the back of the house, and down a

* Forsyth's Hotel.

steep and thickly wooded bank, brings us upon Table Rock, a flat ledge of limestone, forming the brink of the precipice, the upper stratum of which is a jagged shelf, no more than about a foot in thickness, jutting out over the gulf below. Here the whole scene breaks upon us. Looking up the river, we face the grand crescent, called the British or Horseshoe Fall. Opposite to us is Goat Island, which divides the Falls, and lower down to the left, is the American Fall. And what is the first impression made upon the beholder? Decidedly, I should say, that of beauty; of sovereign, majestic beauty, it is true, but still that of beauty, soul-filling beauty, rather than of awful sublimity. Every thing is on so large a scale; the height of the cataract is so much exceeded by its breadth,* and so much concealed by the volumes of mist which wrap and shroud its feet; you stand so directly on the same level with the falling waters; you see so large a portion of them at a considerable distance from you; and their roar comes up so moderated from the deep abyss, that the loveliness of the scene, at first sight, is permitted to take precedence of its grandeur. Its coloring alone is of the most exquisite kind. The deep sea-green of the centre of the crescent, where it is probable the greatest mass of water falls, lit up with successive flashes of foam, and contrasted with the rich, creamy whiteness of the two sides or wings of the same crescent; then the sober gray of the opposite precipice of Goat Island, crowned with the luxuriant foliage of its forest trees, and connected still further on with the pouring snows of the greater and less American Falls; the agitated and foamy surface of the waters at the bottom of the Falls, followed by the darkness of their hue as they sweep along through the perpendicular gorge beyond: the mist, floating about, and veiling objects with a softening indistinctness; and the bright rainbow which is constant to the sun—altogether form a combination of color, changing too with any change of light, every variation of the wind, and every hour of the day, which the painter's art cannot imitate, and which nature herself has perhaps only effected here.

And the motion of these Falls, how wonderfully fine it is! how graceful, how stately, how calm! There is nothing in it hurried or headlong, as you might have supposed. The eye is so long in measuring the vast, and yet unacknowledged height, that they seem to move over almost slowly; the central and most voluminous portion of the Horseshoe even goes down

* The height of the Horseshoe Fall is 150 feet; its breadth 2376 feet.

silently. The truth is, that pompous phrases cannot describe these Falls. Calm and deeply meaning words should alone be used in speaking of them. Any thing like hyperbole would degrade them, if they could be degraded. But they cannot be. Neither the words nor the deeds of man degrade or disturb them.—There they pour over, in their collected might and dignified flowing, steadily, constantly, as they always have been pouring since they came from the hollow of his hand, and you can add nothing to them, nor can you take any thing from them.

As I rose, on the morning following my arrival, and went to the window for an early view, a singular fear came over me that the Falls might have passed away, though their sound was in my ears. It was, to be sure, rather the shadow of a fear than a fear, and reason dissipated it as soon as it was formed. But the bright things of earth are so apt to be fleeting, and we are so liable to lose what is valued as soon as it is bestowed, that I believed it was a perfectly natural feeling which suggested to me for an instant, that I had enjoyed quite as much of such a glorious exhibition as I deserved, and that I had no right to expect that it would continue as long as I might be pleased to behold. But the Falls were there, with their full, regular and beautiful flowing. The clouds of spray and mist were now dense and high, and completely concealed the opposite shores; but as the day advanced, and the beams of the sun increased in power, they were thin and contracted. Presently a thunder shower rose up from the west, and passed directly over us; and soon another came, still heavier than the preceding. And now I was more impressed than ever with the peculiar motion of the Fall; not, however, because it experienced a change, but because it did not. The lightning gleamed, the thunder pealed, the rain fell in torrents; the storms were grand; but the Fall, if I may give its expression a language, did not heed them at all; the rapids above raged no more and no less than before, and the Fall poured on with the same quiet solemnity, with the same equitable intentness, undisturbed by the lightning and rain, and listening not to the loud thunder.

About half a mile below the Horseshoe Fall, a commodious road has lately been cut in a slanting direction, down the side of the perpendicular cliff, and through the solid rock, to the river. Here we find a regular ferry, and are conveyed in a small boat across the stream, which is now narrowed to a breadth of about twelve hundred feet, to the American side. The passage is perfectly safe, and, though short, delightful, as it affords a

superb view of the Falls above and the dark river below. The current is not very rapid, and near the American side actually sets up toward the Falls; by the help of which eddy the boat regains what it had lost in the middle of the stream. We land almost directly at the feet of the American Fall, and by walking a little way to the right, may place ourselves in its spray. Now look up, and the height will not disappoint you. Now attend to the voice of the cataract, and it will fill your soul with awe. It seems as if the 'waters which are above the firmament' were descending from the heights of heaven, and as if 'the fountains of the great deep were broken up' from below. The noise, which permits free conversation to those who are on the bank above, is here imperative and deafening. It resembles the perpetual rolling of near thunder, or the uninterrupted discharge of a battery of heavy ordnance, mingled with a strange crashing and breaking sound. This resemblance to the roar of artillery is heightened by the sight of the large bodies of spray which are continually and with immense force exploded from the abyss. The impression of superior height is gained, not so much from the fact that the American Fall is actually ten or twelve feet higher than the British, as from your having a complete *profile* view of the one, from brink to base, which you cannot well obtain of the other.

Flights of secure wooden steps bring us to the top of the bank,* where we again stand on a level with the descending Falls. We soon found that the greatest variety of interest was on this, the American side. The village of Manchester is situated on the rapid, just above the Fall. A bridge is thrown boldly over the rushing and 'arrowy' rapid to a small island, called Bath Island, where there are one or two dwellings and a paper-mill; and from this spot another bridge runs with equal boldness to Goat Island. The whole breadth of the space thus traversed is one thousand and seventy-two feet.

Goat Island is a paradise. I do not believe that there is a spot in the world, which, within the same space, comprises so much grandeur and beauty. It is but about a mile in cir-

* On this bank, near the ferry-house, there is a stone embedded in the ground, rudely carved on which there has lately been discovered, by removing the moss which had grown over it, the following inscription—'I. V. 1747.' This is by far the most ancient date to be found in the vicinity. I. V. whoever he was, when he looked upon the Falls must have been surrounded by a perfect wilderness. What poet will speak in his name, and describe his feelings, and record his thoughts, as he stood here alone with God?

cumference, and in that mile you have a forest of tall, old trees, many of them draperied with climbing and cleaving ivy; a rich variety of wild shrubs and plants; several views of the rapids; an opportunity to pass without discomfort under the smaller American Fall, and the very finest view, I will venture to say, of the great Crescent, or Horseshoe Fall. Turn to the left, as you enter this Eden, and you come out into a cleared and open spot, on which you discern a log hut, with vines round its door and windows, and a little garden in front of it, running down to the water's edge; a flock of sheep feeding quietly, or reposing pleasantly, under scattered clumps of graceful trees; while, beyond this scene of rural repose, you see the whole field of the rapids, bearing down in full force upon this point of their division, as if determined to sweep it away. Or, turn to the right, and threading the shady forest, step aside to the margin of the smaller American Fall,* and bathe your hands, if you please, in its just leaping waters. Then, pursuing the circuit of the island, descend a spiral flight of stairs, and treading cautiously along a narrow footpath, cut horizontally in the side of the cliff, enter the magnificent hall formed by the falling flood, the bank of which you have just left, and command your nerves for a few moments, that, standing as you do about midway in the descent of the Fall, you may look up, eighty feet, to its arched and crystal roof, and down, eighty feet, on its terrible, and misty, and resounding floor. You will never forget that sight and sound.

Retrace your steps to the upper bank, and then, if your strength holds out, proceed a short way further to the enjoyment of a view, already referred to, which excels every other in this place of many wonders. It is obtained from a bridge or platform, which has recently been thrown out over some rocks,† and is carried to the very brink of the Horseshoe Fall, and even projects beyond it; so that the spectator at the end of the platform, is actually suspended over it. And if he is alone, and gives way to his feelings, he must drop upon his knees, for the grandeur of the scene is overpowering. The soul is elevated, and at the same time subdued, as in an awful and heavenly presence. Deity is there. The brooding and

* This is separated from the greater Fall by a diminutive island, covered with trees, which tenaciously maintains its terrible position, in emulation, as it were, of Goat Island. This lesser Fall, small as it is compared with the others, would of itself be worth a journey.

† These are called the Terrapin Rocks.

commanding Spirit is there. 'The Lord is upon many waters.' The heights and the depths, the shadows and the sunlight, the foam, the mist, the rainbows, the gushing showers of diamonds, the beauty, and the power, and the majesty all around and beneath, environ the spirit with holiest influences, and without violence, compel it to adore. 'Deep calleth unto deep.' The cataract, from its mysterious depths, calleth with its thunder, back to the deep lake, and up to the deep sky, and forward to the deep ocean, and far inward to the deep of man's soul. And the answer of the lake, and the answer of the sky, and the answer of the ocean, are praise to the Maker, praise to him who sitteth above the water-flood, praise to Almighty God! And where is the soul which will not also hear that call, and answer it even with a clearer and louder answer, and cry, Praise to the Creator, praise to the infinite, and holy, and blessed God!

These Falls are not without their history;—but, like their depths, it is enveloped with clouds. Geologists suppose, and with good apparent reason, that time was when the Niagara fell over the abrupt bank at Queenstown, between six and seven miles below the place of the present Falls, and that it has, in the lapse of unknown and incalculable years, been wearing away the gulf in the intermediate distance, and toiling and travelling through the rock, back to its parent lake. The abrupt termination of the high bank and table land at Queenstown, the correspondence of the opposite cliffs to each other all the way up to the Falls, the masses of superincumbent limestone, which both the American and Canadian cataracts hurl, from time to time, into the boiling abyss,* all seem to favor this supposition. But when did the grand journey begin? When will it end? How vain to ask? How momentary human life appears, when we give our minds to such contemplations! Where was the cataract toiling in its way, when none but the awe-struck Indian came to bow before its sublimity? Where was it, when the moss-buried trunk, which now lies decaying by its borders, was a new sprung sapling, glittering with the spray-drops which fed its

* Within a few years, several pieces of the upper stratum have been thus thrown down. The waters, however, are now obliged to act upon a surface three times wider than that which formerly sustained them, and the limestone is becoming more and more compacted with the harder chert, as they approach Black Rock. Their retrocession must therefore be slow, beyond the power of computation. Beneath the limestone strata, there is a layer of loose shale, which is easily washed away, and which is always first hollowed out, before the limestone falls.

infant leaves? Where was it, before the form of a single red man glided through the forest? Where was it, when lofty trees stood by it in the intimate sympathy of centuries, which long since have been resolved into earth? Where was it, when winds and clouds were its only visitors; and when the sun and blue heaven by day, and the moon and stars by night, alone looked down and beheld it, the same as they do now? And is not science blind and foolish, when she does not learn to be humble? Is she not miserably blind and foolish, when, being in her elements and leading-strings, she lisps impiety, instead of prayer!

Four days flew by us, like the waters of the rapids, while we staid here, and then came our time for departure. As we rode down to Lake Ontario, on the bank of the river, and turned every moment to catch glimpses of the Falls, we were favored, when between two and three miles on our way, with a full view of the whole cataract, through an opening in the woods. We stopped and alighted, in order to enjoy the melancholy pleasure of contemplating it for the last time. It looked softer and gentler in the distance, and its sound came to the ear like a murmur. I had learned to regard it as a friend; and, as I stood, I bade it, in my heart, farewell.

Farewell, beautiful, holy creation of God! Flow on, in the garment of glory which he has given thee, and fill other souls, as thou hast mine, with wonder and praise. Often will my spirit be with thee, waking and in dreams. But soon I shall pass away, and thou wilt remain. Flow on, then, for others' eyes, when mine are closed, and for others' hearts, when mine is cold. Still call to the deeps of many generations. Still utter the instructions of the Creator to wayfaring spirits, till thou hast fulfilled thy work, and they have all returned, like wearied travellers, to their home.—*Token*, 1832.

ORNITHOLOGY.

NO. I.

[Under the above-named head we propose to publish a series of essays on the general structure and habits of birds, from the most authentic sources.]

The term Ornithology is derived from the Greek *ornis*, a bird, and *logos*, discourse, and donotes that part of Zoology which treats of birds.

Birds are two-footed animals, covered with feathers, and furnished with wings. Like quadrupeds and the cetaceous tribe, they have warm blood, a heart with two ventricles, and two auricles, and lungs for the purpose of respiration; but they are distinguished from both by their feet, feathers, wings and horny bill, as well as by the circumstances of their females being oviparous.

The elegant and beautiful coloring of many of the feathered race, the graceful ease of their flight, their various music, their tender solicitude for their offspring, their engaging instincts, their susceptibility of domestication, and their subservience to the sustenance of man, have, in all ages, contributed to interest the latter in the study of their history.

The structure of birds and their habits of life, are wonderfully adapted to the various functions which they are destined to perform. The pointed beak, the long and pliant neck, the gently swelling shoulder, the expansive wings, the tapering tail, the light and bony feet, are all wisely calculated to assist and accelerate their motion through the yielding air. Every part of their frame is formed for lightness and buoyancy their bodies are covered with a soft and delicate plumage, so disposed as to protect them from the intense cold of the atmosphere through which they pass; their wings are made of the lightest materials, and yet the force with which they strike the air is so great, as to impel their bodies forward with astonishing rapidity, while the tail serves as a rudder to direct them to the different objects of their pursuit. The internal structure of birds is no less wisely adapted to the same purposes. Their lungs have several openings, communicating with corresponding air bags, or cells, which fill the whole cavity of the body from the neck downwards, and into which the air passes and re-passes, in the process of breathing. This is not all; the very bones of birds are hollowed out with the design of receiving air from the lungs, from which air pipes are conveyed to the most solid parts of the body, and even into the quills and plumelets of the feathers, which are hollow or spongy for its reception. As all these hollow parts, as well as the cells, are only open on the side communicating with the lungs, the bird requires only to take in a full breath to fill and distend its whole body with air, which, in consequence of the considerable heat of its body, is rendered much lighter than the air of the atmosphere. By forcing this air out of the body again, the weight becomes so much increased, that birds of a large size can dart down from great heights in the

air with astonishing rapidity.* The structure of insects is not a little analogous.

The almost universal diffusion of air in the bodies of birds is of infinite use to them, not only in these long and laborious flights, but likewise in preventing their respiration from being stopped or interrupted by the rapidity of their motion through a resisting medium. Were it possible for man to move with the swiftness of a swallow, the actual resistance of the air, as he is not provided with internal reservoirs similar to those of birds, would soon suffocate him.

Stomach of Birds. The stomach of birds forms them into two distinct natural classes; those with cartilaginous stomachs, covered with very strong muscles, called a gizzard; and those with membranous stomachs more resembling that of carnivorous quadrupeds. The former is given to birds whose principal food is grain and seeds of various kinds, or other hard substances that require much friction to communicate, to assist which, gravel is necessary; the latter is given to birds which feed upon flesh or fish, and whose digestion is accelerated more by the gastric juice than by the action of the stomach. Those of the first class digest or retain every substance swallowed; and those which eject or disgorge innutritious matter unavoidably taken in, such as feathers, fur, bones, &c. belong to the second class, as is conspicuous in the falcon, owl and others that feed on fish. Granivorous birds seem to possess the power of retaining the small stones taken into the gizzard, or evacuating them, when they become polished and less useful, but cannot disgorge them. In a state of nature the quantity of gravel taken in must be regulated, no doubt, by the sensation of the stomach; but, wonderful as it may seem, in domesticated animals those instinctive faculties are deranged. Instances frequently occur where the whole cavity of the gizzard is filled with gravel stones. The food of granivorous birds is conveyed entire into the first stomach, or craw, where it undergoes a partial dilution by a liquor secreted from the glands, and spread over its surface. It is then received into another species of

* Humboldt saw the enormous vulture of the Andes, the majestic condor, dart suddenly from the bottom of the deepest valleys to a considerable height above the summits of Chimboraco, where the barometer must have been lower than ten inches. He frequently observed it soaring at an elevation six times higher than that of the clouds in our atmosphere. This bird, which reaches the measure of fourteen feet with the wings extended, habitually prefers an elevation at which the mercury of the barometer sinks to about sixteen inches.

stomach, where it is farther diluted, after which it is transmitted into the gizzard, or true stomach, consisting of two very strong muscles, externally covered with a tendinous substance, and lined with a thick membrane of prodigious power and strength, in which organ the food is completely triturated, and prepared for the operation of the gastric juices. In order to ascertain the strength of these stomachs. Spallanzani had recourse to a great variety of ingenious experiments. Tin tubes full of grain were forced into the stomachs of turkeys, and after remaining 20 hours, were found to be broken, compressed and distorted in the most irregular manner. In the space of 24 hours, the stomach of a cock broke off the angles of a piece of rough, jagged glass, though, on examining the gizzard no wound or laceration appeared. In a ball of lead were fixed 12 strong needles, with the points projecting about one-fourth of an inch from the surface. Thus armed, the ball was covered with a case of paper, and forced down the throat of a turkey. The bird retained it a day and a half without manifesting any symptoms of uneasiness, and the points of all the needles were broken off close to the surface of the ball, except two or three, of which the stumps projected a little. The same interesting observer relates, that he fixed 12 small and very sharp lancets, in a similar ball of lead, which was given in the same manner to a turkey cock, and left eight hours in the stomach, at the expiration of which the organ was opened; but nothing appeared except the naked ball, the lancets having been broken to pieces, and the stomach remaining sound and entire. Hence we may infer, the stones so often found in the stomachs of many of the feathered tribes, may powerfully contribute to the pulverization of grain and other hard substances which constitute their food.

Granivorous birds partake much of the nature and disposition of herbivorous quadrupeds, agreeing with them in the number of their stomachs, the quality of their food and the gentleness of their manners. Content with the seeds of plants, with fruits, insects and worms, their principal attention is directed to procuring food, hatching and rearing their offspring, and eluding the snares of men and the attacks of predaceous animals. As they are generally tractable and easily domesticated, man has selected for his own advantage those which are most prolific and profitable, which form a valuable store of rich, wholesome and nutritious food. The stomachs of carnivorous birds are smaller than those of the granivorous kinds, and their intestines are much shorter. Many species of birds possess a reservoir for food, called a

craw or crop, which seems to answer the same purpose as the first stomach of ruminating animals. Here it is that the food is softened and prepared for the stomach, or carried to the young.

Blood of Birds. This appears to be more highly oxygenated than in other warm-blooded animals; at least it is warmer, of a brighter color, and circulates more rapidly, the pulse of birds usually running above a hundred beats in a minute. This may account for their being so voracious; some birds consume more than their own weight of food in the course of a day.

CABINET CYCLOPÆDIA.

[We have just received from London the twenty-second volume of the Cabinet Cyclopædia, containing a 'Treatise on the Origin and Progressive Improvement of the Silk Manufacture: conducted by Rev. Dionisius Lardner, L.L. D. F. R. S. L. & E. etc.

This work is eminently calculated to furnish the Silk Cultivator with most of the necessary information to accomplish his art, and it cannot fail to be instructive and interesting to the general community.

We propose to publish a considerable portion of it, in a series of essays, with notes and observations from practical and scientific men of the United States. We shall, however, omit extracting from it in the present number, to give place for some preliminary remarks on the subject.]

SILK MANUFACTURE.

NO. I.

Within these few years past, the public attention has been directed more than ever before, to the culture of silk.—Some zealous efforts have been made, and are still making to increase and disseminate this branch of business throughout the Union. The public sentiment begins to demand that we should no longer be indebted to other countries for an article that can be so easily produced in our own; and that the natural riches of our country, embracing every variety of clime and soil, should remain subject to the bias of contracted vision, and dormant beneath the eye of prejudice. Too long, indeed, have Americans listened to the counsel of strangers to their country and to its interests, rather than seek for facts, in the bosom of her grateful soil—thereby allowing their own reason and intelligence to the dupe of foreign ignorance, envy and rivalry. But happily for ourselves, we live in an age and country in which the people are but little prone to credit

such exclusive possession of nature's gifts; and it will create exceeding disappointment in all unprejudiced minds, if the lapse of a few short years shall not place the affected superiority of other countries among the fictions and delusions of former ages. Bountiful nature, replete with benevolence, has bestowed on us every favor within her gift, and asks only of man to aid the developement of her intrinsic riches by the hand of culture*. As to the assertions, advanced by foreigners, that our climate is not congenial to the culture of silk, or that it cannot be manufactured in this country, they certainly cannot be supported by facts, and have principally obtained currency and credence by repetition. For, experiments sufficiently numerous have been made to establish the fact, that the culture and manufacture of this article can be carried on with as much or more advantage in this country as it can be in Europe. And there need no longer remain a doubt that it will become one of the most important branches of our national industry, and like that of cotton, combine in its favor the triple interests of agriculture, manufactures and commerce.

To show the importance of this species of culture in the United States, and the profit attending it, permit me to make a few brief statements. It appears by the report made to Congress by their Committee on Agriculture, in May, 1826, that in 1821 the importations of manufactured silks into the United States amounted to $4,486,924; of which $1,057,233 were exported; and by a gradual increase in the course of four years, the importation amounted to $10,271,527; of which only $2,565,742 were exported, leaving a balance of $7,705-785 to be paid for. Since that time, it has gradually increased, and the consumption of the past year may be fairly estimated at $10,000,000; being about one dollar to each free white person including men, women and children.

Fortunately for the United States, the nations that supply us with manufactured silks are as much in want of the raw article, as their customers of their fabrics. France imports annually, to the amount of 30,000,000 of franks, of raw silks; and Great Britain purchases annually to the amount of £1,800,000 sterling. These two sums exceed 14,000,000 of American dollars.

Here then are two rich and increasing markets offered to the industry of the American people for the sale of their raw silk. They must expect to meet competition with other na-

* Prince on the Vine.

tions; but the superiority of the American silk will insure them a preference.

The following statistics of a mulberry orchard of two acres, are by the late Andrew Parmentier, Esq. of New York:—

650 standard trees in the low parts of the ground, each 20 feet apart.
250 standard trees on the rising places, 12 feet apart.
650 dwarf trees on suitable ground.

1550 total.

This ground to be fenced by mulberry hedges. The purchase money for about two acres, with cost of manure and necessary tillage, is estimated at $500.

Supposing that to secure full success to this orchard by using none of the foliage, and tilling and replacing dead trees during five years, counting loss of interest and other expenses accruing, we have an increase of debt of $375, and a capital of $881; but commencing from the fifth year up to the twentieth of its existence, the author of these statistics forms three different periods of five years each. The plantation will give in the first period from 90 to 95 quintals of foliage, that is 9000 lbs. or fodder for five ounces of worm seeds; 35 lbs. of silk worth about $180, that is 20 per cent. on $881. The second period will annually afford for 14 ounces, 15,000 quintals, or 95 lbs. of silk, equal to 47 per cent. on $881. But the third period to the twentieth year of age of the orchard, from 500 to 650 quintals may be expected, which will feed 28 ounces, and give 196 lbs. of silk, worth nearly $1000, or more than 112 per cent.

Admitting however that each crop of silk costs some expense, which in no way whatever could be one-quarter or one-third the profits, these latter are so secured and so considerable, that the undertaking would prove in the highest degree useful and profitable.

The following estimate is by Mr. D'Homergue, a celebrated silk manufacturer of Philadelphia.

An acre contains 43,560 square feet. 1500 mulberry trees, six years old, will produce each 30 lbs. of leaves, which make 45,000 lbs. An acre will contain 1500 mulberry trees, planted at a distance of 12 square feet from each other. This is in case it is wished to grow corn or wheat in the intervals between the trees. But if the ground is to be devoted to mulberry trees alone, 3000 trees may be planted on an acre at six square feet distance, and these at six years old will produce 90,000 lbs. of leaves. Selling the leaves at half a cent a pound, the purchaser gathering them, or at one cent a pound

delivered to the purchaser, would produce in the first case $900, in the latter $450.

According to the calculation of Dandolo, an Italian silk cultivator, which appears to be exaggerated, 90,000 lbs. of leaves, at 21 lbs. of leaves for one pound of cocoons, would produce at least 3700 lbs. of cocoons, which at 25 cts. a pound (the moth not being stifled) would produce $950. After killing the chrysalides, the cocoons will produce a higher price, say, 30, 40, or perhaps 50 cents a pound, according to the quality and abundance, or scarcity of the articles, and the profit will be proportionate.

The said 3700 lbs. of cocoons, being good and well-reeled, will produce, at eight pounds of cocoons for one pound of silk, 420 lbs. of the raw article, which at $3 a pound, the price which China silk sells for in our sea ports, will amount to $1260; and if perfectly well-reeled and suited to the European market, will produce, at $6 a pound, $2520, the amount of the produce of one acre of land the sixth year after planting! Now allowing one-third part of this sum for rearing the worms and reeling the silk, the principal part of which may be performed by women and children, a net profit of $1680 per acre may be realized; and after that time, as the trees grow larger, a much greater amount.

ON THE ACCLIMATING PRINCIPLE OF PLANTS.

[From the American Journal of Geology.]

It is nature's plan, that nothing should remain fixed and stationary. She exists by motion, and manifests herself through endless changes. even death and decomposition are her pioneers, to prepare the way for life and existence. The very rocks and minerals, (unorganized matter,) are changed by the action of the elements, form new affinities, and yield to the circumstances of moisture and heat, with which they may be surrounded. Animals exhibit still more changes; they possess powers of development, and the means of continuation of kind. Endowed with locomotion, they can change their climate and habitation: with a natural pliancy of constitution, they can accommodate themselves to the quality of their food, and character of the country upon which they may be thrown, and appear beautiful or deformed accordingly as they may be acted on by circumstances. Many of them can bear the most vio-

lent contrasts of heat and cold, and adapt themselves to many climates.

Vegetables too, are organized, have their growth and decay, and the powers of re-production. Beyond this we allow them but few capacities; no locomotive powers, none of the sensibilities common to animals, nor that pliancy which can accommodate itself to circumstances. They are the fixtures of nature, with but little latitude in which to flourish, and but little diversity of soil from which to derive nutriment. The object of this paper is to enlarge their sphere, and to show that they possess more power to change their climates, and capacity to bear the contrasts of heat and cold, than we have generally ascribed to them; to illustrate it with many instances where they have actually adapted their growth and habits to a great extent of country and diversity of latitude, and to urge agriculturists to make more efforts to vary their culture.

Plants have *directly* no locomotive powers, but *indirectly* they have in a great degree the faculty of changing their places, and. consequently, their climate. The embryo germ wrapped in a kernel, or seed, is virtually a plant, ready to germinate when thrown upon its parent earth, and affected with heat and moisture. It is in a most portable shape, and can be transported with ease to an unlimited distance. Nature in many instances superadds to seeds, wings, down, feathers and chaff, by which they become buoyant, and are carried by the winds of heaven, by the storms that sweep the forest, and by the streams and currents of rivers and the ocean, to an immense distance, and through many degrees of latitude! They become finally deposited in some genial soil, and at one remove, or through a succession, they occupy extensive regions. Nature manifests her great care of the embryo, by coating some of her seeds with shells, which protect them from the attacks of insects and the action of the elements; others have bitter, narcotic or poisonous qualities, which forbid animals eating them; and many are filled with oily, or resinous matter, which resists for ages, and even centuries, the action of the elements, unless acted upon by the proper degree of heat and moisture. By such qualities they endure, and await a suitable time and conveyance to their destined place, in order to extend and vary their families.

Birds also convey the seeds of plants in their crops over a wide extent, before they become triturated and digested; and when these winged carriers die, or decay, from accident or age, the seeds are deposited, and take root in some distant land. Animals also convey them in their stomachs to a con-

siderable distance, and pass them uninjured by the powers of digestion.

Man, more provident than all, to whom plants are necessary, whose support, whose comforts, and whose pleasures connect him with them, carries their choice seeds, slips and scions far and wide. His interests foster their growth, his attentions enrich their products, and his skill and science preserve their existence, and adapt them to their new condition. In an improved community man's wants multiply: he has occasion for the more varied and rich fruits; more abundant and luxurious clothing, and furniture of vegetable growth; odors to regale his senses, vegetable flavors to pamper his appetites, and all the medicinal plants to heal his various diseases, and invigorate his shattered constitution. He attaches himself to agriculture and horticulture; plants becomes his companions; he carries a creative resource into those departments, and by his attentions, forms new varieties and excellencies, unknown to the wild state of vegetable existence. Such are the means nature has provided for the propagation and extension of plants; such are the indirect locomotive powers they possess. We must no longer, therefore, consider vegetables such inert and sluggish beings.

We will now treat plants as having a kind of locomotive existence. We know that they are very perfectly organized, have sensibility and sexual intercourse. We know that they have lungs, by which they breathe, and are connected with the air. We know by abundant experience, how easily they are affected by the elements, by heat and cold, moisture and drought. We know how radically soil affects their productiveness, how immediately they are stinted or stimulated by the nature of the extraneous circumstances with which they are surrounded. Beings, therefore, that have such perfect organization, that, although they are fixed in their places, are deeply changed by every shower, and every breeze, and every stroke of the cultivator—beings, so necessary to the wants, and very existence of animated nature—should possess, in a high degree, the faculty of changing their climate, and of accommodating themselves to circumstances, and the strong contrasts of seasons. Nature else would be wanting in her usual foresight, and in her adaptation of one thing to another.

If an animal is carried by accident, or its own wanderings, to a country or climate that is not congenial to its nature, it can and does make use of its locomotive powers, to regain one that is more suitable to it. This happens every day. Thousands of birds and fish, and other animals, migrate regularly, to

avoid even the different seasons of the same year, and could not, with all their versatility of constitution, exist without it. We may infer, then, that plants, which, after having rooted themselves, cannot migrate at all, should be endowed with faculties to bear all the changes of the seasons, and even of climate, in the same dull place of their existence. *They are so endowed*, and can often bear more changes, and support more disasters of storms and ravages of insects, than animals; and often continue to flourish under violent and sudden changes.

Human care, and the providencies of nature, have given to many plants a great extent of climate and latitude, an enlarged growth, and an increased and improved product. Let us bring together such instances as are within the knowledge of all, and which ought to stimulate our cultivators to greater efforts.

The valley of the Euphrates was doubtless the native region of all those fine and delicious fruits which enrich our orchards, and enter so largely into the luxury of living. We thence derived all the succulent and nutritious vegetables that go so far to support life; and even the farinaceous grains appertain to the same region. The cereal productions began in that same valley to be the staff of life.

Our corn, our fruit, our vegetables, our roots, and oil have all travelled with men from Mesopotamia up to latitude 60°, and even farther, in favorable situations. The cares of man have made up for the want of climate, and his cultivation atoned for this alienation from their native spot. The Scandinavians of Europe, the Canadians of North America, and the Samoides of Asia, are now enjoying plants which care and cultivation have naturalized in their bleak climes. Melons and peaches, with many of the more tender plants and fruits, once almost tropical, have reached the 45° of latitude in perfection, and are found even in 50°. Rice has travelled from the tropics to 36°, and that of N. Carolina now promises to be better than that of more southern countries. The grape has reached 50°, and produces good wine and fruit in Hungary and Germany. The orange, lemon and sugar cane, strictly tropical, grow well in Florida, and up to 31½°, in Louisiana, and the fruit of the former much larger and better than under the equator.

Annual plants grown for roots, and vegetables, and grain, go still farther north in proportion, than the trees and shrubs, because their whole growth is matured in one summer; and we know that the developement of vegetation is much quicker

when spring does open in countries far to the north, than in the tropics. In Lapland and on Hudson's Bay, the full leaf is unfolded in one or two weeks, when spring begins, although it requires six or eight weeks in the south. Nature makes up in despatch for the want of length in her seasons, and this enables us to cultivate the annual plants very far to the north, in full perfection. The beans, pumpkins, potatoes, peas, cabbages, lettuce, celery, beets, turnips, and thousands of others, seem to disregard climate, and grow in any region or latitude where man plants and cherishes them. The fig is becoming common in France; the banana, pine-apple, and many other plants, have crossed the line of the tropics, and thousands of the plants, valuable for food, clothing and medicine, and such as are cultivated for their beauty, fragrance or timber, are extending their climates, and promise much comfort and resource to man. Plants lately introduced, whose cultivation has not run through many ages or years, have acquired but little latitude in their growth, and show but little capacity to bear various climates, because time has not yet habituated them to such changes, and human cares have not imparted to them new habits and new powers.

Nothing can be effected by suddenness in *acclimating* plants; too quick a transition would shock them; it must be a very gradual process, embracing many years, and many removals. The complete success that has attended the plants first named, the earliest companions of man, proves this. In the more recent plants success is exactly in proportion to the length of time that a plant has been in a train of experimental culture.

The most striking method of testing the effect of climate on plants, is to carry suddenly back to the south, such as have been extended far, and become habituated to a northern climate. Such plants have so much vigor, and the habit of a quick and rapid growth so firmly fixed on them, by a long residence in the north, that when suddenly taken to the south, although the season be long and ample, they continue, from habit, to grow and mature quick, and obtain the name of rare-ripe; because they do not take half of the time to mature, that those of the same family require, which have never been so changed. Gardeners give us early corn, peas, fruit, and turnips, by getting seed from places far to the north; and cotton growers renew the vigor of the plant by getting the most northern seed. This practice is common in the case of most plants, and is founded on the supposition that plants do, and can acquire habits.

The fact supported in the first number of the American Journal of Geology and Natural Science, 'that plants are most productive near the northern limit in which they will grow,' that they bear more seed or fruit, and have more vigor of constitution, offers much encouragement to agriculturists. This proves that it is not a meagre, stinted existence, devoid of profit or productiveness, that we give to plants, by pushing their culture far north, but a strong and healthful growth, one that repays the labor and attention, by a greater product than belongs to more southern situations.

Every view that we can take of this interesting subject, every fact within our knowledge, whether drawn from the actual state of cultivation, or from physiological investigations into the habits, nature and construction of plants, goes to show that plants do become acclimated, both in the natural and artificial way, to a great extent. Enough has been witnessed to prove that plants have a physical conformation, that does accommadate itself to circumstances, and have capacities more extensive than are generally ascribed to them: enough has been realized to encourage farther efforts, and to give us hopes of much future benefit.

In this enlightened age, where invention in the arts and mechanical philosophy is changing the whole order of our social economy, where new comforts and resources, unknown to our fathers, are daily developed, and, as it were, created; in this age, where labor-saving machinery is redoubling the productions of the arts, almost exempting man from in-door exertion, and cheapening all the elegancies of clothing, furniture, buildings and books, until luxuries are common to rich and poor, and education within the reach of all, why should not agriculture awaken, put forth its energies, and partake of that spirit of improvement that is working its magic in all other departments? Why does it not avail itself of that knowledge of the nature of the soil, which chemistry gives? those tabular statements of the weather and climates, which naturalists furnish? those philosophical investigations into the nature and habits of plants, which have been presented? and that labor-saving spirit that seems to know no limits in other branches of business? Why should all our capital improvements fly the open fields, where culture exists, and be realized only in cabinets and manufactories? Agriculture follows the old dull routine, and its products lumber on to market in heavy carts, while all other branches move on, aided by a thousand inventions, with ease and despatch. That field, whence our food is derived, and on which our very existence

depends, lies neglected, while we cultivate luxuries to a morbid excess. Every thing is cheapened but human food; every thing becomes annually more attainable, but the necessaries of the table. If this disproportion between the arts and agriculture continues to advance, we are destined to live in a sort of splendid pauperism: enjoying the luxuries of fine houses and furniture, we shall enjoy every thing to satiety but bread. W.

THE DOMESTIC CAT DIVING FOR FISHES.

[From Loudon's Magazine of Natural History.]

Sir—In reading that delightful little work of Mr. White's, 'The Natural History of Shelborne,' the propensity of cats for fish, and their repugnance to wetting their feet, are remarked by the intelligent author. An anecdote or two of these beautiful but maligned quadrupeds, proving their piscivorous natures in the one case, and in the other a strong natural antipathy overcome by a still more powerful propensity, will perhaps be amusing to some of your readers, who, like myself, have a regard for every thing 'which lives, and moves, and has a being.' In the centre of my father's garden was a fish-pond, stocked with various kinds of fish. Many a time and oft have I witnessed puss (and a very pretty tortoise-shell puss she was, and a great favorite withal) watching at its brink for its finny inmates, and on their appearing at the surface darting on her prey, and in spite of the wetting and ducking she encountered, bringing them in triumph to the pond's edge, and regaling on the delicious fare. This sport, I believe, she continued in the enjoyment of till the day of her death; and so amused were we with her angling powers, that no obstruction was ever thrown in her way. The pond, moreover, was not, as some may imagine, sloping in its bottom, and picturesque in its appearance, but it was completely a cockney pond in its *tout ensemble*, octangular in its shape, of precise equality in its depth, with a pavement smooth and regular both in the sides and base; therefore, before this puss could gratify her taste, a plunge was to be taken which was sufficient to make the stoutest cat's heart tremble.

The other anecdote relates to a cat of more extraordinary acquirements, which belonged to one of my workmen. In a large and deep pond at my premises in the Green Lanes, a stock—not of fish, but of rats—had accumulated, the de-

struction of which was undertaken by this uncommon cat. He was daily in the habit, for nine or ten years, of stationing himself on the margin of the water, and of jumping into the liquid element on the appearance of his game. A day seldom closed unsuccessfully, and he has been seen and known to catch and bring from the watery deep four of these vile vermin betwixt sunrise and sunset. As I said, this amusement was kept up by him for the space of nine or ten years, in fact until his rat-catching powers deserted him; and when his teeth became all extracted in the performance of his daily feats, and his master had him killed, that the miserable death of starvation might not await him. This cat was truly a sportsman, and pursued the sport solely for the love of it; he caught his game with avidity, but never eat a morsel; so that the pleasure of the chase alone had charms enough in his mind to vanquish one of the strongest antipathies of his nature.

I am Sir, &c.

WILLIAM SCALES.

Stamford Hill, April 13, 1831.

MANUAL ON THE CULTURE OF SILK.

[A Manual containing Information respecting the growth of the Mulberry Tree, with suitable Directions for the Culture of Silk. In three parts. By J. H. Cobb, A. M. Published by Direction of His Excellency Gov. LINCOLN, agreeably to a Resolve of the Commonwealth. Boston: Carter & Hendee, 1831.]

WE have perused this treatise with much pleasure, and think it will be of great utility to those who are engaged in the culture of silk. It is introduced by an able report of a committee of the Massachusetts Legislature, of which Mr. Abel Wheeler was chairman, and a resolve 'That his Excellency the Governor be requested to cause to be compiled and printed a concise Manual, to contain the best information respecting the growth of the Mulberry Tree, with suitable directions for the culture of Silk—and that this manual be distributed in suitable numbers in the city of Boston, and to every town in the Commonwealth. That to defray the expense thus incurred, he be authorized to draw his warrant on the treasury for a sum not exceeding six hundred dollars.'

The author says in his preface, that 'In preparing this Manual the author has been guided by the personal experience which he has had for several years in the culture of the

mulberry tree, and rearing of silk worms in the state of Massachusetts.'

The work is accompanied with recommendations from Mr. P. S. Du Ponceau of Philadelphia, and Dr. Felix Pascalis of New York, both of whom are well informed in the silk culture. They speak in high terms of the ability of the author, and the just execution of the work, and conclude that it deserves the confidence of the public, and that its circulation should be encouraged.

BUFFON'S NATURAL HISTORY.

[A Natural History of the Globe, of Man, of Beasts, Birds, Fishes, Reptiles, Insects and Plants. From the Writings of Buffon, Cuvier, Lacepede, and other eminent Naturalists. Edited by John Wright, Member of the Zoological Society of London. A New Edition, with Improvements from Godfrey, Griffith, Richardson, Lewis and Clark, Long, Wilson and others. With Five Hundred Engravings. In Five Volumes. Boston: Gray and Bowen, 1831.]

We have been favored with a copy of this work, and have been highly interested with its perusal. From its being nearly destitute of technicalities it is well adapted to popular reading. We believe that there is not so much valuable matter presented to the public at so cheap a rate, as is contained in this work. It abounds with descriptions and interesting anecdotes of a great portion of the Natural World, which renders it worthy the attention of the enlightened public. The American editor in his preface observes, that 'The English edition of this work appeared under the title of "Buffon's Natural History, &c." On examination, it seemed hardly to deserve this title, as it consisted rather of selections from Buffon's works, with additions from Lacepede, Cuvier, and other eminent naturalists. We have therefore given it a title which seems to correspond more exactly with its character.

'It will be at once apparent that the work was not designed for the scientific, but only for the general reader. The English editor appears to have had it in view, to collect from Buffon and others, the most accurate and lively descriptions of the various objects which belong to the animal kingdom, for the purpose of forming a *popular* treatise on Natural History; he therefore avoided the use of scientific terms, and arranged the subjects with little regard to scientific classification.

'If there were defects in this plan, still the design, on the whole, appeared to be important, and we have undertaken to present a new edition of the work to the American public, keeping in view the original plan of the London editor; we have not materially altered the arrangement of the work; but we have collected, from various sources, a large amount of materials, and added about three hundred pages of matter. This chiefly relates to American Zoology, which was very imperfectly treated of in the London edition. We have made free use of the excellent work of Dr. Richardson, recently published in London, and have been therefore able to furnish a tolerable complete account of the Quadrupeds of North America; we have also selected from Wilson many of his inimitable descriptions of our own birds, and believe that we have noticed most of the species in his work, as well as that of M. Bonaparte. We have not only given all the best engravings in the London edition, but we have added many others, from the Zoological Gardens, Tower Menagerie, and other sources; a few have been drawn from living animals.'

We shall make a brief extract which may not be uninteresting to our readers. In speaking of the *lusus naturæ* of the human species, the following description of the Siamese youths is given:

'They were born in the east, and are known as the Siamese youths. A fleshy band, of from four to six inches long, and two broad, proceeding from the pit of each stomach, connects them together. The entire band admits four fingers to pass freely behind it, when the boys stand shoulder to shoulder, and its width and thickness allow the thumb to meet the fingers on the front aspect. The vestiges of one common navel are visible at the lower and middle part of the band, and it is equidistant between the two bodies. The band is hollow, except about an inch in the centre, and there is evidently a hernial protrusion into it from each of the boys, in the act of coughing. Their appearance is healthy, their dispositions cheerful, and their attitudes and motions graceful. They move across the room with all the ease and grace of a couple skilfully waltzing, and seem never to have any difference of intention or purpose which can give pain to their band of union by making them draw different ways. The natural position of the youths, or that which seems to place the connecting ligament in its natural form, is that of face to face. This position, as must be obvious, is extremely inconvenient, and the boys have consequently accustomed themselves to stand or move side by side. Their persons are thus

drawn mutually closer, which makes it necessary for one to place his arm about the neck or waist of the other. The position may be varied—that is, the ligament may be made an axis, upon which the youths can turn and bring in contact the two opposite sides, instead of those which were first in collision. Their identity of purpose, and unity of movement, combined with a general similarity of tastes, disposition and habit, had created in some a suspicion that their organization was more intimately connected than at first sight appears. They eat, drink and sleep simultaneously; their health is affected alike; and, on being conveyed through the streets in a coach, so perfect is their unity of *action*, that they could not be prevailed upon to look out of its opposite windows. These circumstances many have been disposed to attribute to something more than the power of habit; but there can be no doubt that the youths are perfectly distinct beings, having each his organization totally independent of each other. This is placed beyond a doubt by various circumstances. No one can fail to be touched with the perfect harmony that subsists between them. Attempts have been made to create jealousies between them, but without the slightest effect. Any gift which they receive, capable of division, is shared between them; and any other description of present passes from one to the other as a joint possession. It would perhaps be more just to say, that they recognize no difference between themselves. A very attentive observer, however, will not fail to discover between these two boys, who certainly bear the strongest possible resemblance to each other, a marked distinction. One seems to be a little more robust than the other, and even to possess an intellectual superiority over his brother. Perhaps this notion acquires plausibility from the circumstance that the former generally acts as the organ of communication on the joint part with the interpreters. It is observed, that this superior brother yields on all occasions to the impulses of the weaker, giving up his own choice, and preferring the course intimated by the other. The inferior brother then playfully leans against his mate for support, or the one pats the cheek, or presses the forehead, or adjusts the shirt collar of the other, in such a way as betrays the kindliest feelings in each, and the tenderest affection for each other.'

We may hereafter make other extracts from this work of equal interest with the preceding.

MISCELLANEOUS INTELLIGENCE.

Boston Society of Natural History.

This Society was instituted for the purpose of contributing to the advancement of Natural Science, with the view of forming a Cabinet of Natural History, and of holding meetings, for lectures, and to discuss subjects relative to the science.

The number of members is unlimited. Every friend of science, at whatever distance he may be from the place where the Society is established, may become a member, and enjoy the benefits of the Society, by being nominated by a member of the Society, and afterwards chosen with a majority of three-fourths of the members present, and by paying an annual assessment of three dollars, exclusive of paying an initiatory fee of five dollars.

A meeting is held in the afternoon of the first Wednesday of each month, for the purpose of mutual improvement, and for transacting the general business of the Society, and lectures are given annually by members of the Society, on the various branches of Natural History.

At the commencement of the Society in February, 1830, several friends of science met for the purpose of seeing what measures could be taken for the formation of such an association, and a committee was chosen to report on the subject at an adjourned meeting. The committee having reported favorably, the Society was immediately organized under the name of the Boston Society of Natural History.

In the October following, a course of lectures was commenced and pursued through the winter, with uncommon interest. A committee being chosen to procure an act of corporation, it was carried before the Massachusetts Legislature, and incorporated Feb. 25, 1831. Since that time the Society has held regular meetings, at which time many interesting communications have been read and several valuable donations received.

Measures were adopted early last season to prepare for the lectures of the present course, which commenced in November. Five able lectures have been given and listened to with much satisfaction.

The Society, at the present time, consists of 112 members, several of whom are our most learned and distinguished men. An ardent zeal has been manifested from the commencement by its members, and we are justified in concluding that much good will result from their untiring efforts for the advancement of science.

Effects of Fear.

The Courier des Etats Unis gives the following account of an experiment said to have been recently made at St. Petersburg: 'Six condemned criminals were placed in an hospital, and confined in the same rooms which had been occupied by sufferers from the cholera. This fact was unknown to them, and they remained in good health for three weeks, making use all the while of the beds which had been used by those who died of that disease. Their sentence of death was then announced to them, with a promise of pardon, if they would enter an hospital, which had been used for the cholera patients, and should escape the malady. They asked nothing better, and were conducted to a place where the cholera had never been. In a few days they were attacked from fear by the cholera. Four of them died—only two survived.'

Live Oak.

It appears by a letter of Col. White of Florida, addressed to the committee on Naval Affairs, that each acre of land adapted to the cultivation of the live oak will bear twenty trees, which, in fifty years from the time of planting, would be fit for ship-building; and worth ninety dollars each; and that the expense of superintendence during the whole period of their growth, for a plantation of 6000 acres, would not exceed $100,000. Little progress has been made in promoting the cultivation of this timber on the lots which have already been purchased; nor have we seen any indication that any measures of importance have been taken for this purpose by the present secretary of the navy.—*Advertiser.*

Method of preventing Iron and Steel from Rusting.

This easy method consists in heating the steel or iron until it burns the hand; then rub it with virgin or pure white wax. Warm it a second time so as to melt and divide off the wax, and rub it with a piece of cloth or leather until it shines well. This simple operation, by filling all the pores of the metal, defends it completely from rust, even though it should be exposed to moisture.—*Jour. de Connois. Usuelles.*

Poisoning by Mouldy Bread.

Dr. Westerhoff attended, in 1826, upon two children of a laborer, who had been simultaneously attacked with the following symptoms. The eldest, ten years of age, had his face red and swollen, his countenance was animated and bewildered, tongue dry, pulse feeble and quickened, head ache, giddiness, unextinguishable thirst, violent cholic, desire to sleep, and alternate unsuccessful attempts to vomit; subsequently sudden vomiting and very abundant alvine evacuations, after which great faintness, indifference to every thing, and sleep only a few minutes at a time. The younger, eight years of age, was even more violently attacked. Having understood that they had eaten the preceding day only a piece of old mouldy rye bread, Dr. Westerhoff prescribed a demulcent treatment, and they soon recovered.

Sometime afterward, several boatmen having eaten some mouldy rye bread were attacked with similar symptoms, but they were quickly relieved by vomiting, which came on spontaneously. The question suggested by these cases is whether this kind of poisoning arises from an alteration in the quality of the bread, or from the vegetation which constitutes mouldings, (*mucor mucedo.*)—*Archives Generales.*

Volcanic Island in the Mediterranean.

The Semaphore of Marseilles states, on the authority of the captain of a brig sailing between Trafani and Girgenti, that an Island was formed by a volcanic eruption in the middle of July, 1831, in that part of the Mediterranean. The phenomena are represented as very striking. An immense mass of water was thrown up to the heighth of 60 feet, accompanied by a sulphurous smoke, and a great noise. The result of the submarine explosion is an island in 37° 6′ north latitude, and 10° 26′ east longitude, from the meridian of Paris.

It is an active volcano, with a crater in its centre, whence lava flows. The sea all around is a hundred fathoms deep.

The last accounts of this island, from the Semaphore, state that the eruption had ceased, and that the crater is now filled with boiling water, from which a sulphurous smoke continues to issue. The island is chiefly formed of spongy lava and puzzolane. The brink of the crater is thirty feet in height at the lowest part, in other places eighty feet, and in the centre two hundred feet. It is easy to land on the south west side. Smoke issues from several points of the sea around.

Ancient Body found in a Bog in Ireland.

The body of a man, in a bog ten and a half feet deep, was found about nine feet below the surface. The abdomen was collapsed, but it, in all other respects, bore the appearance of recent death. The face was that of a youth of fine features, with hair long and black, loosely hanging over the shoulders. The dress, which was tight, and reached to the elbows and knees, was composed of the skin of an animal, probably the moose deer, laced with thongs, and having the hair inwards. There were no weapons, but a long staff or pole was laid on each side the body. Varro derives the Sagum of the Romans from the Sac, or skin dress of the Gauls and Britons, which probably was tight, and not flowing, from the nature of the material. The Suevi, according to Tacitus, wore flowing hair, and the staffs were familiar to the Silures, according to the same author. From the depth at which it was found, an immense period of time must have passed to admit of nine feet of vegetable matter having grown over the body, and all the circumstances concur to make it probable that the body was of a very remote period; for before the arrival of the English, the Irish wore, for the most part, ill made garments, made from their black sheep.—*Abstract of a paper in Edin. N. Phil. Jour. June*, 1831.

On the Phenomenon of Blushing.

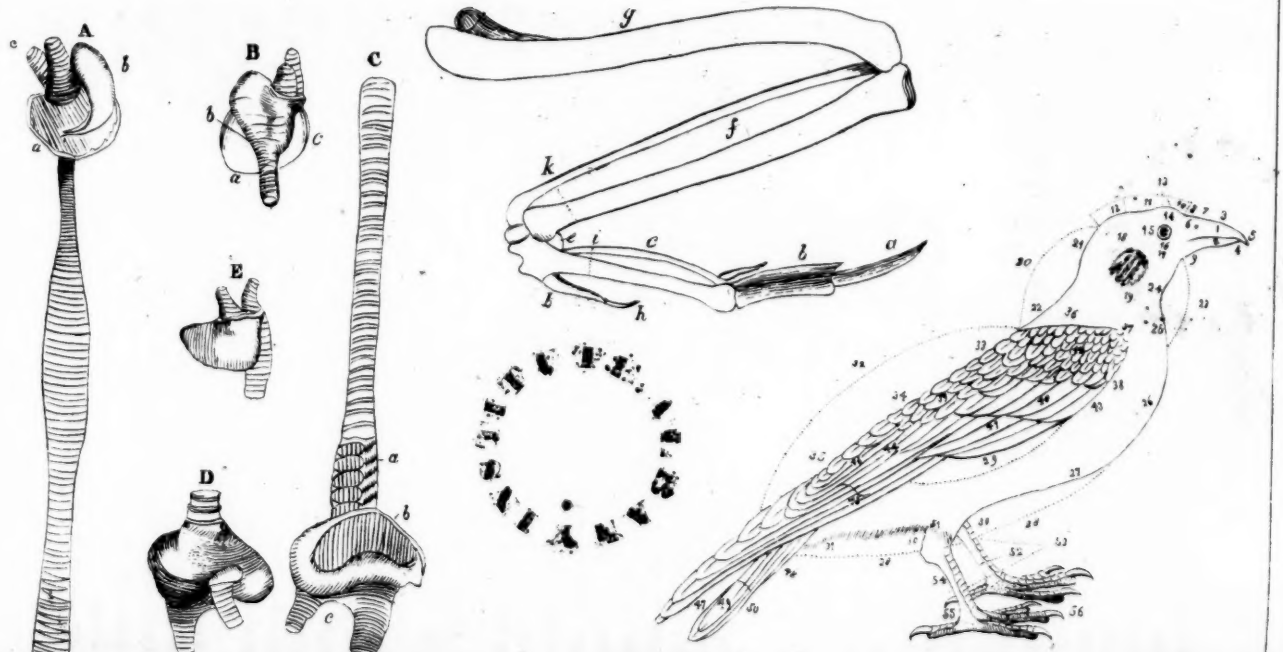
M. E. A. Lauth observes, that he is not aware that any precise information has been afforded as to the kind of vessels which produce the color of the face. Most physiologists merely say that it depends upon the capillaries. M. Lauth states, that if the arteries are successfully injected, the whole of the face becomes of an uniform red tint. It cannot, therefore, be these vessels which produce the phenomenon of blushing. He has derived the following results from a perfect injection of the facial veins: the cheeks were deeply colored, the chin, the tip of the nose and the forehead obtained a slighter tint, and the other parts of the face were still less colored. This kind of coloration resembles that which is produced by mental emotions during life, and we may therefore conclude that blushing depends in part upon venal congestion.—*Mem. de la Société, &c. de Strasbourg.*

METEOROLOGICAL JOURNAL,

Kept at Boston, for November, 1831.

Day.	THERMOMETER.				BAROMETER.			FACES OF THE SKY.			DIRECTION OF WINDS.			RAIN.
	Morn.	*Noon.*	*Even.*	*Max. Min.*	*Morn.*	*Noon.*	*Even.*	*Morn.*	*Noon.*	*Even.*	*Morn.*	*Noon.*	*Even.*	*Incl.*
1	40	54	46	55 37	29.77	29.74	29.30	Cloudy	Fair	Fair	S.	S. W.	S. W.	0.02
2	41	54	43	55 40	29.88	29.92	29.97	Fair	Fair	Fair	S. W.	W.	N. W.	
3	37	52	38	51 38	30.00	30.00	30.08	Fair	Fair	Fair	N. W.	N. W.	N. W.	
4	38	49	46	50 34	30.18	30.14	30.12	Fair	Fair	Rain	N. W.	E.	N. E.	
5	37	52	38	55 38	30.10	30.15	30.19	Cloudy	Fair	Fair	S. W.	N. W.	N. W.	0.04
6	32	50	40	48 33	30.24	30.20	30.12	Fair	Fair	Fair	N. W.	N. W.	N. W.	
7	37	56	45	56 37	30.08	30.00	30.10	Fair	Fair	Fair	W.	N. W.	N. W.	
8	34	49	36	47 35	30.22	30.20	30.29	Fair	Fair	Fair	N. W.	N. W.	N. W.	
9	31	46	45	44 32	30.33	30.20	30.35	Fair	Cloudy	Cloudy	N. W.	E.	N. E.	
10	44	48	48	48 43	30.32	30.27	30.16	Cloudy	Cloudy	Rain	N. E.	N. E.	S. E.	
11	54	62	48	64 48	29.84	29.75	29.83	Cloudy	Fair	Fair	S. E.	S. W.	N. W.	0.46
12	38	52	42	48 38	29.90	29.87	29.90	Fair	Fair	Fair	N. W.	N. W.	N. W.	
13	39	50	44	50 38	29.85	29.74	29.68	Fair	Fair	Fair	N. W.	N. W.	S. W.	
14	39	43	39	43 38	29.55	29.51	29.60	Cloudy	Cloudy	Cloudy	S. W.	N. W.	N. W.	0.16
15	37	48	37	47 36	29.64	29.62	29.68	Fair	Fair	Fair	N. W.	N. W.	N. W.	
16	35	48	38	47 35	29.69	29.65	29.70	Fair	Fair	Fair	N. W.	N. W.	N. W.	
17	35	46	38	46 35	29.70	29.61	29.68	Fair	Fair	Fair	N. W.	N. W.	S. W.	
18	34	54	48	52 33	29.70	29.62	29.54	Fair	Fair	Cloudy	N. W.	N. W.	S. E.	0.92
19	44	50	38	50 37	29.40	29.45	29.61	Rain	Fair	Cloudy	S. W.	N. W.	N. W.	
20	36	42	40	44 33	29.71	29.70	29.72	Cloudy	Cloudy	Cloudy	N. W.	N. W.	N. W.	
21	33	46	41	45 33	29.77	29.75	29.69	Fair	Fair	Fair	N. W.	N. W.	S. W.	
22	40	42	36	42 36	28.99	28.86	28.62	Rain	Cloudy	Fair	N. E.	S. W.	N. W.	1.16
23	36	44	39	42 34	29.44	29.53	29.75	Fair	Fair	Fair	N. W.	N. W.	N. W.	
24	33	42	36	43 34	29.72	29.80	30.00	Fair	Fair	Fair	N. W.	N. W.	N. W.	
25	32	42	32	41 30	30.05	30.04	30.04	Fair	Fair	Snow	N. W.	N. W.	S. W.	
26	28	37	34	37 27	30.11	30.04	30.00	Fair	Cloudy	Snow	W.	N. W.	N. E.	
27	36	39	33	40 33	29.80	29.51	29.40	Rain	Rain	Snow	E.	E.	N. E.	0.68
28	27	36	27	37 27	29.52	29.60	29.65	Fair	Fair	Fair	N. W.	N. W.	N. W.	
29	23	30	23	28 22	29.50	29.50	29.72	Fair	Cloudy	Fair	N. W.	N. W.	N. W.	
30	22	28	19	27 20	30.02	30.00	30.00	Fair	Fair	Fair	N. W.	N. W.	N. W.	

Depth of water fallen, 3.44 inches.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